MEMORANDUM

Agenda Item No. 11(B)3

TO: Honorable Chairperson Barbara Carey-Shuler, Ed. D and Members, Board of County Commissioner

DATE: April 27, 2004

SUBJECT: Safe Lite Monitoring System Pilot Program; Consultant Report on the observations of the monitoring system for street light installations

FROM: George M. Burgess
County Manager

RECOMMENDATIONS:

It is recommended that the Board accept the attached report from the Public Works Department's Electrical Consultant, Martin-Vilato and Associates. This report provides the consultant's review and evaluation on the subject matter.

The department has reviewed the operation of the system along with the consultant during the period of the Pilot Program, and is most confident that the installation of said system on a countywide basis would significantly improve the safety, and provide a greater level of protection to the general public. Upon your acceptance, the department will further study this monitoring system and make a future recommendation to the Board as to the best utilization of this service, its estimated cost and the recommended procurement process.

BACKGROUND:

On June 18, 2002, the Board of County Commissioners approved a resolution authorizing the County Manager to negotiate a contract with Horsepower Electric, Inc. for a Pilot Program to study the "Safe Lite Monitoring System" developed by their company. The project started September 9, 2002 and in scheduled for completion on March 9, 2004, at a cost of $200,000. The Pilot Project included the test of ten circuits consisting of 385 street lights. The monitoring system which holds a U. S. Patent has the ability to monitor the street light system and detect a number of unsafe situations that could result in dangerous conditions to the general public. The system has a unique capability to immediately shut the street light energy source off, until remedial action has been taken, thus eliminating any life threatening situations that may have occurred in the system.

Assistant County Manager

MARTIN - VILATO
ASSOCIATES, INC.
CONSULTING ENGINEERS

February 24, 2004

MIAMI-DADE PUBLIC WORKS DEPARTMENT
111 N.W. 1ST STREET 15TH FLOOR
MIAMI, FLORIDA 33128

ATT.: ESTHER L. CALAS, P.E.
Assistant Director

REF: Review of STREET LIGHTING MONITORING SYSTEM

On February 9, 2004 the undersigned witnessed a fourth demonstration on the operation of Safe-Lite Monitoring System for Street lighting installations.

This demonstration was conducted "live" via CCTV cameras from a demonstration test site that have been part of the Pilot Program being conducted by Horsepower Electric, Inc. (the Vendor). The 10 Sites that are part of this Pilot Program are:

No.	NAME	SERVICE AREA	SERVICE POINT LOC.	POLES	CKTS.	BRAN-CHES
1	DC#1	Coral Way: 87 Ave – 94th Ave.	92 Avenue	34	2	2
2	DC#2	Coral Way: 87 Ave – 102 Ave.	95 Avenue	41	2	2
3	DC#3	Flagler St.: 102 Ave. – 118 Ave.	109 Avenue	53	2	2
4	DC#4	87 Avenue: NW. 25 St. – Doral Tunnel	NW. 35 St.	32	2	2
5	DC#5	NW. 62 St.: 27 Ave. – 37 Ave.	32 Avenue	36	2	3
6	DC#6	NW. 32 Ave.: NW. 79 St. –NW. 103 St.	NW. 92 St.	31	2	2
7	DC#7	27 Avenue: NW: 160 St. – NW. 183 St.	NW. 175 St.	31	2	4
8	DC#8	NW. 199 St.: 52 Ave. – 39 Ct.	47 Avenue	40	2	2
9	DC#9	NW. 103 St.: 18 Ave. – 26 Ave.	23 Avenue	33	2	4
10	DC#10	S. Bayshore Dr.: Aviation – McFarlane	W/O NW. 27 Ave	54	2	4
			Total.....	385	20	27

The Vendor was able to demonstrate under actual field conditions that the System was capable of performing as intended.

Refer to attached Exhibit "A" for a list and description of the Monitored Functions.

One of the aims of this Pilot Program was to test the System by intentionally inducing various alarm conditions. These tests became superfluous when actual alarm situations began to occur

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and were immediately detected by the System. Refer to attached Exhibit "B" Monitoring System Record, for a listing of all alarm conditions detected during the first 10 months of operation.

OBSERVATIONS:

- The Vendor has obtained a patent on the monitor system as well as U.L. Listing of the monitoring panel.
- During the test year, the Vendor indicated that various internal components of the Monitor Panel were upgraded. The latest panel design that was shown to us, is of stainless steel construction and has a built-in photocell.
- Field components of the system include the monitoring wiring and pole knock down detection switches to allow the system to operate at full capacity.
- The System is quite sensitive, so as part of the system installation at each service point, the Vendor shall conduct all necessary tests and perform all required adjustment.
- At present, the System detects cuts in the grounding wire. The Vendor stated that the new panels will also detect cuts in the hot and neutral wires.
- The present panels establish communication with the Central Station via telephone modems, the Vendor States that he will be switching to radio communication to speed-up the Polling Time.
- Each System Panel is autonomous in detecting conditions that affect human safety and acts by itself accordingly by shutting down the power immediately, if necessary, without the need of a remote command from the Central Station.

CONCLUSION:

System operates in full accord with Vendor's claims stated in their proposal of January 24, 2002.

The System is so sensitive that problems that may go unnoticed for a long time w/o the Monitoring System will become immediately apparent before they actually become a serious problem.

System detects immediately damages to the lighting installation created by other Contractors working underground in the vicinity of the light poles.

Miami-Dade Public Works Department
Att.: Esther L. Calas, P.E.
Ref.: Street Lighting Monitoring System

February 24, 2004

This System does not need a communication link to operate, so it can be viewed as a safety device first and as a Monitoring System as a secondary function. The monitoring feature will generate a maintenance call in the event of a malfunction in the operation of the street lights.

System increases dramatically the level of safety for street lighting installations. Electrocutions due to metal poles becoming accidentally energized will be greatly eliminated.

Please contact us if further discussions are needed.

Sincerely,

MARTIN-VILATO ASSOCIATES, INC.

Enrique G. Vilato, P.E.

2-24-04

EGV/bpv

C.C.: Pedro Hernandez, P.E. Asst. County Manager
Aristides Rivera, P.E., P.L.S.
Joaquin Urrechaga, P.E.

Enclosure:

EXHIBIT "A"

SAFE-LITE MONITORING SYSTEM

DESCRIPTION

The Safe-Lite Monitoring System is a control system specifically developed to increase the safety and efficiency of roadway light systems by monitoring the voltage and current fluctuations on a circuit and taking corrective action as required. It provides a cost-effective method to minimize risks to life and property.

The system, installed on each service panel, includes a monitoring device and modem, a command center computer, and a communications channel. It monitors all the circuits fed by the control panel, can turn the service power off when a dangerous condition is detected, and stores data relative to the operation of each circuit. At scheduled intervals, the command center computer polls the monitoring devices and downloads the data for permanent storage.

SERVICES AND BENEFITS

ROADWAY LIGHTS SYSTEM SAFETY IMPROVEMENTS

- **Ground Fault Monitoring**

  The Safe-Lite System continually monitors each circuit's currents and immediately detects ground faults on live circuits. Upon detection of a ground fault, the system automatically shuts down the power supply to the circuit and sends a warning to the command center computer. The system blocks the power supply to the circuit and can only be reset manually after the ground fault is repaired.

- **Grounding Continuity**

  The Safe-Lite System monitors the ground continuity in both on and off circuits. If the circuit is on and the device detects an open grounding, the system shuts down the power supply to the circuit. If the open grounding is detected while the circuit is off, the system will block the power supply to the circuit. In both instances, immediately after detection of a problem, the system will send the appropriate warning to the command center computer. The system must be reset manually and only after the grounding continuity has been reestablished.

- **Knock-down pole**

  The Safe-Lite System detects when a pole is knocked down, either by accident or weather conditions. Upon detecting a pole knock-down

situation, the system will immediately either cutoff or block the power supply to the pole's circuit, depending whether the circuit is on or off, and send a warning to the command center computer. The system will continue to block the power supply to the system until necessary repairs are performed.

ROADWAY LIGHTS SYSTEM MONITORING

- **Number of lights out on each circuits**

  The Safe-Lite System monitors lights' operation and detects lights out on a circuit. It sends a notification to the command center computer allowing dispatch of repair crews to the affected circuit. It allows a swifter and more accurate response than any other system currently in use to detect and repair defective fixtures.

- **Circuit Overload**

  The Safe-Lite System measures the load on a circuit and compares to a specific load parameter. The System is capable of sending notification to the command center computer and cut-off the power supply when the overload exceeds the specified parameter.

- **Door Open Warning**

  Through a sensor installed on each service panel, the Safe-Lite System can detect when a service's cabinet door is open. The devise sends a notification to the command center computer where the operator can verify if it is an accidental condition. If required, a crew is dispatched to re-latch the door reducing the probability of accidents or tampering.

- **In Line Fuse Monitoring**

  The Safe-Lite System automatically detects when an in-line fuse has failed and sends a notification to the command center computer. A crew can be dispatched to perform the necessary repairs allowing for a timely response. This results in a higher percent of lights on, thus creating a safer environment for life and property.

- **Circuit's Power Supply**

  When the Safe-Lite System detects an interruption to the circuit's power supply, the device sends a notification to the command center computer. This notification is forwarded to the power supplier so corrective action can be implemented minimizing the time that the lights are out of service.

ROADWAY LIGHTS SYSTEM REMOTE OPERATION

- **Bypass of Circuit's Photocell control**

  The Safe-Lite System allows remote bypassing of the photocell control installed on the service panel. A circuit can be powered on and off, as required, from the command center computer. When required, the command center initiates a work order to perform repairs as needed.

- **Weather Emergencies**

  The capability of the Safe-Lite System to remotely power on and off one or all roadway lights circuits significantly reduces the risks to life and property due to weather related emergency events. The risks associated to flooding and wind damage to the roadway lights system are minimized when the power to the circuits is cut-off immediately after or during the event's occurrence. The power cut-off can be triggered by one of the monitoring capabilities of the system or by request of the public or governing authority. The period of time where hazardous conditions prevails is minimized and greatly reduced compared to the time required to dispatch a crew to effect the power down of the circuit.

MONITORING SYSTEM RECORD OF EVENTS

EXIBIT "B"

*	DATE	SERVICE	ALARM	CAUSES	SOLUTION
R	3/17/2003	DC-3	G.F.1 Warning	Induction in the circuit	Change the set point
T	5/15/2003	DC-4	Branch 2 Pole Down	D.C. disconnected the K/D switch	Connect the K/D switch
R	5/16/2003	DC-3	Circuit 2 Ground Fault	Ballast Damaged (Water in the coil)	Replace the ballast
R	5/23/2003	DC-9	Circuit 1 Ground Fault	Ballast Damaged (Water in the coil)	Replace the ballast
R	5/28/2003	DC-1	Cicuit 1 Ground Fault	Ballast Damaged (Water in the coil)	Replace the ballast
R	6/2/2003	DC-1	Circuit 1 Over Load	Ballast Damaged (Water in the coil)	Replace the ballast
R	6/5/2003	DC-8	G.F. Detector Error	Current Transducer Damaged (Water in the panel)	Replace the current transducer,seal the panel
R	6/12/2003	DC-1	Circuit 1 Ground Fault	Ballast Damaged close the neutral(Water in the coil)	Replace the ballast
R	6/22/2003	DC-1	Circuit 1 Ground Fault	Ballast with water in the coil	Turn on the circuit at noon to dry the balllast
R	6/22/2003	DC-3	Circuit 1 Ground Fault	"	"
R	6/24/2003	DC-2	Comm Error	Modem Damaged (Lighting induction from Phone cable)	Replace the Modem
R	6/25/2003	DC-2	Many Lights Out	There was 3 Lights out	Fix the Lights
T	7/8/2003	DC-1	Branch 1 Pole Down	Horsepower diconnect the K/D switch	Connect the K/D switch
R	7/12/2003	DC-7	Comm Error	Transitory communication fault	----------
T	7/29/2003	DC-8	Branch 3 Pole Down	Horsepower disconnect the K/D switch	Connect the K/D switch
R	7/31/2003	DC-9	Many Lights Out	There was 3 Lights out	Fix the Lights
T	8/5/2003	DC-8	Branch 3 Pole Down	Horsepower disconnect the K/D switch	Connect the K/D switch
R	8/7/2003	DC-7	Many Lights Out	There was 7 Ligths out	Fix the lights
T	8/13/2003	DC-3	Circuit 1 Ground Fault	Horsepower simulation	Stop simulation
T	8/13/2003	DC-3	Branch 1 Pole Down	Horsepower disconnect the K/D switch	Connect the K/D switch
R	8/14/2003	DC-8	Many Lights Out	There was 4 Lights out	Fix the lights
R	8/18/2003	DC-10	Branch 2 Pole Down	Other Company Damaged Cables	Rewire between two poles
R	8/18/2003	DC-6	Comm Error	Transitory communication fault	----------
R	8/20/2003	DC--1	Circuit 1 Ground Fault	Ballast too wet	Wait a few hours in the morning and reset alarms
R	8/28/2003	DC-7	G.F. Detector Error	Transducer Damaged	Replace the Transducer
R	8/29/2003	DC-7	Many Lights Out	There was 8 Lights Out	Fix the lights
R	9/4/2003	DC-4	Photocell Damaged	Was too Cloudy at 6:28 P.M.	Only Wait
R	9/4/2003	DC-3	Circuit 1 Ground Fault	Ballast Damaged	Replace Ballast
R	9/10/2003	DC-3	Comm Error	Transitory communication fault	----------
R	9/10/2003	DC-3	Many Lights Out	There was 4 Lights out	Fix the lights
R	9/13/2003	DC-3	Photocell Damaged	Was too Cloudy at 2:41 P.M. and Circuit Turned ON	Only Wait
R	9/21/2003	DC-6	Comm Error	Transitory communication fault	----------
R	9/25/2003	DC-4	Photocell Damaged	Was too Cloudy at 6:55 P.M.	Only Wait
R	9/25/2003	DC-7	Photocell Damaged	Was too Cloudy at 6:57 P.M	Only Wait
R	9/25/2003	DC-3	GF Circuit 1 Warning	Ballast Wet	Only Wait
R	9/28/2003	DC-4	Branch 1 Pole Down	A car Knocked Down the Pole	Replace The Pole
R	9/29/2003	DC-1	Photocell Damaged	Was too Cloudy at 4:25 P.M.	Only Wait
R	9/29/2003	DC-10	Photocell Damaged	Was too Cloudy at 4:40 P.M.	Only Wait
R	9/29/2003	DC-6	Photocell Damaged	Was too Cloudy at 4:51 P.M.	Only Wait
R	9/29/2003	DC-7	Photocell Damaged	Was too Cloudy at 5:05 P.M.	Only Wait
R	10/1/2003	DC-9	Comm Error	Bell South disconnect the phone line	Call Bell South and request the connection
R	11/2/2003	DC-3	Branche 1 Ground Wire Cut	Auxiliar cable #14 Cut	Replace the cable
R	12/4/2003	DC-3	Branch 1 Pole Down	A car Knocked Down the Pole	Replace The Pole
R	12/12/2003	DC-8	Comm Error	Phone Line Fault	Call Bell South and request the connection
R	12/15/2003	DC-5	Branche 2 Pole Down	A car Knocked Down the Pole	Replace The Pole
R	1/18/2004	DC-1	Photocell Damaged	Other Company Cover the Photocell	Uncover the Photocell
R	[illegible]004	DC-1	Branch 1 Pole Down	Other Company Pickedup the [illegible]	Wait by the other Company
R	[illegible]004	DC-1	Photocell Damaged	Other Company Testing the Ci[illegible]	Wait by the other Company